Amendments to the Claims:

Claims 1, 14 and 30 to 36 are amended as set forth hereinafter.

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for optimizing target quantities for optical precision measuring, the method comprising the steps of:

obtaining ancillary parameters from image data and deriving control data for influence quantities;

determining a weighted summation of the individual ones of said ancillary parameters for [[the]] a target function to be optimized wherein said target function includes a plurality of focus values each being different from the other; and

determining all ancillary parameters in such a manner that they have a like extremum of the functional dependency of the influence quantities.

2. (Original) The method of claim 1, wherein the following are used as said ancillary parameters: contrast, homogeneity, mean brightness and/or gradient.

3. (Original) The method of claim 2, wherein the computation of the ancillary parameters takes place based on simulated images which are generated with illumination models of computer graphics.

4. (Original) The method of claim 1, wherein the determination of the ancillary parameters takes place via difference forming with an input value with the objective of obtaining a like extremum.

5. (Original) The method of claim 1, wherein the weighting factors for the optimization criteria are so computed that a standardization of the individual parameters takes place.

6. (Original) The method of claim 1, wherein the determination of the ancillary parameters takes place from each type of color images or gray value images.

7. (Original) The method of claim 1, wherein the target quantities of the optimization define 2D structure sites.

8. (Original) The method of claim 1, wherein the target quantities of the optimization define the focus site.

9. (Original) The method of claim 7, wherein the target quantities of the optimization define the 2D structure site and focus site.

10. (Original) The method of claim 1, wherein the target quantities of the optimization define the 3D structure site.

11. (Original) The method of claim 1, wherein at least one influence quantity relates to the illumination.

12. (Original) The method of claim 11, wherein a parameter set of the reflection characteristics and transmission characteristic p_{bdfr} is first determined for determining the

ancillary parameters.

13. (Original) The method of claim 1, wherein an image sequence is recorded by a camera with a synchronized controllable illuminating source and the illumination adjustment is changed between the images.

14. (Currently Amended) A precision measuring apparatus for measuring workpieces, the precision measuring apparatus comprising:

means for obtaining ancillary parameters from image data and deriving control data for influence quantities;

means for determining a weighted summation of the individual ones of said ancillary parameters for [[the]] a target function to be optimized wherein said target function includes a plurality of focus values each being different from the other; and

means for determining all ancillary parameters in such a manner that they have a like extreme of the functional dependency of the influence quantities.

15. (Original) The precision measuring apparatus of claim 14, wherein said precision measuring apparatus is a coordinate measuring apparatus.

16. (Original) A method for optimizing target quantities for optical precision measuring wherein ancillary parameters are obtained from image data of a workpiece to be measured and wherein control data is derived from said ancillary parameters for influence quantities of these target quantities, the method comprising deriving the control data with the steps of:

determining the courses of the ancillary parameters in

dependence upon at least one influence quantity and determining the courses of the ancillary parameters so that the courses have a like extremum of the functional dependency of the influence quantity;

determining a total course of the ancillary parameters in dependence upon the influence quantity via weighted summation of the courses of the ancillary parameters;

determining an extremum of the total course of the ancillary parameters; and,

determining the corresponding value of the influence quantity at the site of the specific extremum as control datum for the influence quantity.

17. (Original) The method of claim 16, wherein the following are used as said ancillary parameters: contrast, homogeneity, mean brightness and/or gradient.

18. (Original) The method of claim 17, wherein the determination of the ancillary parameters takes place from simulated image data which are generated with illumination models of computer graphics.

19. (Original) The method of claim 16, wherein at least individual ones of said ancillary parameters are determined via difference forming with an input value with the objective of obtaining a like extremum of the functional dependency of said influence quantity.

20. (Original) The method of claim 16, wherein the weighting factors for the weighted summation of the courses of the ancillary parameters are so determined that a standardization of all ancillary parameters takes place.

21. (Original) The method of claim 16, wherein the determination of the ancillary parameters takes place from color images or gray value images.

22. (Original) The method of claim 16, wherein the target quantities define the 2D structure sites and/or focus sites.

23. (Original) The method of claim 16, wherein the target quantities define 3D structure sites.

24. (Original) The method of claim 16, wherein at least one influence quantity relates to the illumination.

25. (Original) The method of claim 24, wherein first a reflectance function p_{bdfr} is determined for determining the course of the ancillary parameters.

26. (Original) The method of claim 24, wherein, as image data for determining the course of the ancillary parameters, an image sequence is recorded by a camera with a synchronized illuminating source and the illuminating adjustment is changed between the images.

27. (Original) An optical precision measuring apparatus comprising:

an image recording device;

an image processing device connected to said image recording device; and,

said image processing device functioning to obtain ancillary parameters for optimizing target quantities of a measuring sequence of a workpiece to be measured and to derive control data from said ancillary parameters for influence

quantities of said target quantities by performing the following steps:

determining the courses of the ancillary parameters in dependence upon at least one influence quantity with the courses of the ancillary parameters being so determined that the courses have a like extremum of the functional dependency from the influence quantity;

determining a total course of the ancillary parameter in dependence upon the influence quantity via a weighted summation of the courses of the ancillary parameters;

determining an extremum of the total course of the ancillary parameters; and,

determining the corresponding value of the influence quantity at the site of the determined extremum as a control data for the influence quantity.

28. (Original) The optical precision measuring apparatus of claim 27, wherein said apparatus is a coordinate measuring apparatus including a movable mechanical assembly and said image recording device is mounted on said mechanical assembly so as to be movable thereby relative to a workpiece in the three coordinate directions (x, y, z).

29. (Original) The optical precision measuring apparatus of claim 28, wherein said image processing device uses at least one of the following as one of said ancillary parameters: contrast, homogeneity, mean brightness and gradient.

30. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein said image processing device determines the ancillary parameters from simulated images which are generated with illumination models of computer graphics.

31. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein said image processing device determines at least individual ones of said ancillary parameters via difference forming with an input value with the objective of obtaining a like extremum of the functional dependency from said influence quantity.

32. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein said image processing device determines the weighting factors for the weighted summation of the courses of the ancillary parameters so that a standardization of all ancillary parameters takes place.

33. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein said image processing device determines the ancillary parameters from each type of color images or gray value images.

34. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein the target quantities define the 2D structure sites and/or focus sites.

35. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein the target quantities define 3D structure sites.

36. (Currently Amended) The apparatus of ~~claim 28~~ claim 27, wherein at least one influence quantity relates to the illumination.

37. (Original) The apparatus of claim 36, wherein a bi-directional reflectance function p_{bdfr} is determined for determining the ancillary parameters.

38. (Original) The apparatus of claim 36, wherein, as image data for determining the course of the ancillary parameters, an image sequence is recorded by a camera with a synchronized illuminating source and the illuminating adjustment is changed between the images.